COLONY OF MAURITIUS

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1920

No. 1038/21

THE HONOURABLE THE COLONIAL SECRETARY,

I have the honour to submit the Annual Report on Agricultural Conditions in Mauritius during the year 1920 and on the working of the Department of Agriculture for the same period.

AGRICULTURAL CONDITIONS IN 1920

The weather conditions experienced during the growing season are summarised in the annexed tabular statement.

Month and Year	Temperature	Rainfall	Sunshine
1919			
November	Normal	Considerably below normal	Markedly above normal
December	Markedly above normal	Markedly below normal	Considerably above normal
1920			
January	Normal	Normal	Normal
February	Markedly below normal	Considerably above normal	Markedly below normal
March	Normal	Slightly below normal	Markedly above normal
April	Markedly below normal	Slightly below normal in amount. Considerably below in distribution	Considerably below normal
May	Slightly below normal	Generally above normal	Normal
June	Considerably below normal	Considerably below normal	Markedly above normal
July	Markedly below normal	Normal	Markedly below normal
August	Normal	Slightly below normal	Slightly below normal
September	Markedly below normal	Markedly above normal	Slightly below normal
October	Normal	Markedly below normal in general	Markedly above normal
November	Markedly below normal	Considerably below normal	Markedly above normal
December	Markedly below normal	Considerably below normal	Above normal

The weather conditions, upon the whole, approximated to the normal, no cyclone approached sufficiently close to the Island as to threaten danger; on the other hand rainfall was generally deficient during the early stages of the cultural season.

The final estimate for the crop of 1920–21 is 258,900 metric tons which is very approximately a normal crop.

In Pamplemousses and Rivière du Rempart the returns have been generally below expectation. Flacq was practically normal. Some disappointment was met with in Black River while the returns in the central districts of Plaines Wilhems and Moka were generally good. In the southern districts of Grand Port and Savanne conditions were particularly favourable and the returns therefrom were markedly above the average.

SUGAR INDUSTRY

The following figures give the final estimate of the 1920–21 Crop compared with the total output of the seven preceding years.

1920–21 *Sugar Crop—Final Estimate—in* 000 *Tons Metric*

District	Final Estimate 1920	1919	1918	1917	1916	1915	1914
Pamplemousses	57.06	50.63	64.22	49.4	45.92	17.94	30.83
Rivière du Rempart	...	...	...	...	...	21.60	35.23
Flacq	43.97	36.86	43.69	39.7	35.04	37.94	43.73
Moka	38.45	35.24	34.70	31.7	31.38	34.91	42.09
Plaines Wilhems	21.13	19.38	19.34	17.9	15.74	13.45	21.16
Black River	7.90	6.54	6.25	6.5	6.08	5.13	6.60
Savanne	43.11	43.33	40.81	38.5	36.19	40.65	46.71
Grand Port	47.28	43.21	43.76	42.3	38.62	42.91	51.01
	258.90	235.19	252.77	226.0	208.97	214.53	277.36

Yield of Vesou Sugar.—Of the estimated crop of 258,000 metric tons for 1920–21, approximately 95.2% will, it is anticipated, consist of vesou sugar ; only 0.2% of first syrups and 4.6% of low syrups will probably be manufactured. The table given below shows the proportion of vesou sugar to the total crop for the past ten years ; it will be seen that between the years 1911-1918, the proportion of vesou sugar has very greatly increased, the result is due largely to improvements in methods of manufacture and also to the policy which factory proprietors have wisely followed during more recent years of returning one grade of white sugar only instead of two as was formerly the case.

Year.	*% Vesou to total Crop.*	*Year.*	*% Vesou to total Crop.*
1911 ...	73.80	1916 ...	80.23
1912 ...	78.70	1917 ...	89.85
1913 ...	80.06	1918 ...	94.50
1914 ...	82.01	1919 ...	94.45
1915 ...	82.60	1920 ...	95.20 (Estimated.)

Factory work of 1920–21.—The average extraction of sugar for the crop is estimated to be 10.7% of the weight of cane handled ; final figures are not yet available : results for previous years are appended :—

Year.	*Commercial Sugar extracted % cane*	*Year.*	*Commercial Sugar extracted % cane*
1914 ...	10.76	1918 ...	10.95
1915 ...	10.83	1919 ...	10.42
1916 ...	10.30	1920 ...	10.70 (Estimated.)
1917 ...	10.62		

The total tonnage of cane crushed for the crop of 1919 amounted to 2,258,040 giving a mean extraction of commercial sugar of 10.42 per cent. of cane. The corresponding figure in 1918 was 10.95—the highest on record.

The highest mean extraction for any single usine during 1919 was 11.81%. and the lowest 8.69%. The frequency distribution of extractions was as follows :—

Extraction.	*Frequency.*	*Extraction.*	*Frequency.*
8.50— 8.74	1	10.25—10.49	12
8.75— 8.99	1	10.50—10.74	13
9.00— 9.24	0	10.75—10.99	5
9.25— 9.49	0	11.00—11.24	8
9.50— 9.74	2	11.25—11.49	0
9.75— 9.99	5	11.50—11.74	0
10.00—10.24	6	11.75—12.00	1

During the year 1920, 54 factories operated ; there has been no alteration in the number of factories at work in the Colony since the year 1918.

Very considerable improvements have been introduced into a numberr of factories during the past year, complete figures for new installations are not as yet available, improvements introduced have comprised machinery imported from England, France and America and also machinery manufactured at the local founderies.

In this connection, local firms have manufactured and installed the following items during the year :—8 cane carriers, 1 mill, 6 sulphitation apparatus, 8 defecators, 6 filter presses, 5 juice heaters, 4 juice strainers, 1 triple effet, 4 quadruple effets, 6 vacuum pans, 1 barometric condenser, 8 air pumps, 13 juice and magma pumps, 11 fans per induced draught, 4 air compressors and 3 boilers.

The determination shown by sugar manufacturers to invest a reasonable proportion of the profits consequent upon the high prices in improving factory installations is a satisfactory feature of the present position.

Further large orders for machinery are now being placed by almost all factories and the coming year will witness a marked further advance in respect of the standard equiqment of the average Mauritian Factory.

Sugar manufacturing operations were conducted under difficulties in certain localities, by reason principally, of labour shortage and also troubles consequent on new installations ; difficulties were also encountered owing to shortage of water on a number of estates before the end of the crop.

Area under cultivation.—At the end of 1919, the total area under sugar cane was estimated to be 170,752 acres, a figure practically identical with that of the preceding year. During 1920 increases of area under cultivation took place in a number of localities ; the exact extent of these increases is not known but they are estimated to amount at least to 2,000 acres ; of these increases, the most noteworthy have occurred in the District of Black River where the extension of La Ferme Irrigation Scheme has led to considerable blocks of land formerly derelict and estimated at a minimum of 600 acres being placed under cane.

Yields of canes in the field were satisfactory in the centre and south of the Island, in the north, fair yields were obtained, in the lower parts of Flacq poor yields were encountered in places while in Black River poor yields were rather frequent.

The reaping of the crop proceeded with considerable difficulty on many properties owing to labour shortage, but few had contrived to finish the crop before Christmas 1920, and about a dozen were forced to continue operations in January 1921.

AREA CULTIVATED BY INDIAN PROPRIETORS

The area cultivated by Indians during the year 1920 has shown an appreciable increase the exact figures are not yet available. The high prices which the Indian Planters have received for their canes have added very materially to the prosperity of this section of the Community. The effect has further been seen to a very marked degree in the increased shortage of labour and in the greatly enhanced prices paid for labourers' wages.

EFFECT OF LABOUR SHORTAGE ON AGRICULTURAL OPERATIONS

The effect of the shortages of labour experienced during the year has been felt to a marked degree on estates and is witnessed by difficulties experienced in the reaping of the crop and also in the performance of cultural operations.

The following table gives an idea of wages currently paid to day labourers and the cost of agricultural operations during the year. In some cases these figures have been considerably exceeded.

Day labourers ...	...	...	...Rs. 2.00—Rs. 3.00
Female labourers	...	...	... 0.75— 1.00
Clearing land ...	...	...	... 150.00— 350.00—per arpent
" Fosseyage " ...	...	...	... 50.00— 90.00— ,,
Manuring ...	...	...	... 10.00— 20.00— ,,
Weeding ...	...	...	... 50.00— 80.00— ,,
Cutting cane ...	...	...	... 30.00— 50.00— ,,

It is to be feared that the results will be seen practically everywhere in a marked lowering of the standard of cultivation adopted ; in consequence increased attention is now being devoted to the adoption of labour saving devices with a view to economising hands. In this connection consideration has been given to the question of the introduction of tractors and implements for the performance of agricultural operations.

One tractor has already been introduced for experimental purposes while a scheme is under consideration for the introduction of several tractors of different makes and their trial on a considerable scale under the auspices of Government and Planters. Some extension has already been seen in the employment of ploughs and cultivators drawn by animals. Many, though not all, of the lands of Mauritius are quite well adapted naturally to implemental cultivation and by the introduction of this system wherever possible great savings of labour are capable of being effected.

Irrigation of sugar cane.—Considerable progress was made during the year towards the completion of the La Ferme Irrigation Scheme for the District of Black River and it is anticipated that the reservoir and distributary canals will be completed during 1921. In anticipation of the completion of the scheme, considerable additional areas were placed under cultivation during the year ; at the end of 1920, the area planted under irrigation of La Ferme water amonted to 2,600 acres as compared with 1,400 acres at the end of 1917 ; it

is anticipated that when the work has been completed, from 3,000 to 3,500 acres will be capable of being irrigated under this scheme. Cane returns from irrigation plantation have been rather disappointing. Much attention has been devoted to the question of the need for experimental investigations in relation to the irrigation of sugar cane with a view to ascertaining the causes for the low yields which have been experienced and to endeavour to formulate a satisfactory system of cultivation for irrigated lands.

A proposal is now under consideration for the establishment of an Experiment Station in the Black River District with this object in view.

In relation to the irrigation project for the northern district known as the La Nicolière Scheme, operations on the construction of the dam were commenced during the year. To finance this scheme arrangements were made under Ordinances No. 8 of 1919 and No. 6 of 1920 to raise a loan of Rs. 500,000 in the form of debentures at 6% repayable in 1934.

Disposal of the Sugar Crop.—With reference to the disposal of the sugar crop of 1920, during the month of May negotiations were entered into between the Royal Commission on the Sugar Supply and the Chamber of Agriculture representing the sugar planters of Mauritius ; these negotiations were conducted through the firm of Messrs. Blyth Brothers and Co. ; as the result, arrangements were concluded for the sale of not less than 90% of the vesou output of the crop at a price of 90/ per cwt., f. o. b. Mauritius for fine to finest quality, a deduction of 1/ per cwt. being made between 1st and 2nd quality vesou and a further 1/ per cwt. between 2nd and 3rd quality vesou as obtained in the previous year.

The financing of the transaction was arranged through the local banks.

To provide working arrangements for carrying out this transaction the Sugar Planter's Syndicate constituted in the previous year under Ordinance No. 10 of 1919 was reconstituted for the current year under Ordinance No. 31 of 1920. Practically all planters have adhered to the Syndicate and the entire vesou crop of the Colony will pass into the hands of the Royal Commission with the exception of a few small lots which have been sold privately and of about 5,000 tons which have been reserved for local consumption.

With regard to the disposal of the crop of 1919, the final settlement for vesou per 50 kilos was as follows :—Class A. Rs. 22.68 ; B. Rs. 22.18 ; C. Rs. 21.68 ; these figures do not include charges for brokerage and commission. More than 95% of the vesou coming from estates in the Syndicate entered into Class A.

Pests and diseases of Sugar Cane during 1920.—In relation to pests and diseases, a very important decrease has been recorded in the incidence of the serious pest known locally as "Moutouc" (Phytalus Smithi). It will be recalled that this insect was introduced into this Colony somewhere about 1907 ; in 1911, it manifested its presence in the District of Pamplemousses as a very serious enemy of the cane which occasioned widespread and severe loss ; control measures under Government supervision were undertaken in that year and have been maintained under the supervision of the Department of Agriculture.

The principal methods of control adopted have comprised the collection of adult beetles and of larvæ and the introduction of the parasitic enemy "Tiphia parallela," which was successfully imported from the West Indian Islands of Barbados in 1915 and has established itself in the infected areas. The following figures give the number of insects captured each year since the commencement of the campaign :—

Year.	*Beetles captured.*	*Year.*	*Beetles captured.*
1911–12 ...	26,460,187	1916–17 ...	72,292,689
1912–13 ...	16,055,556	1917–18 ...	70,035,663
1913–14 ...	36,484,130	1918–19 ...	71,119,278
1914–15 ...	51,356,507	1919–20 ...	30,969,504
1915–16 ...	42,511,241		

The reduction in the number of insects captured in 1919–20 is undoubtedly due to a reduction in the incidence of the pest as the result of the various repressive measures which have been adopted. On certain properties which were formerly heavily infected, the infestation has now been reduced practically to nothing. On the other hand, the insect continues to manifest a tendency to extend the area of infestation and in order to check this tendency as far as possible, an elaborate system of patrol of the periphery of the infected area by collecting gangs has been inaugurated during the past two years. The importance of the work accomplished has been recognised by the planting body to the extent that by arrangement with Government a special export tax of 2 cents of a rupee per 100 kilos of sugar is now levied (under Ordinance No. 2 of 1920) on all sugars leaving the Colony for the purpose of supplying funds for more extended activities.

Under this Ordinance, a sum of approximately Rs. 50,000 has this year been made available for the work and it has in consequence become possible considerably to extend operations against the pest during the year. Without being unduly optimistic, there appears good reason to hope that within the next few years the evil effects of this insect will have become very greatly ameliorated if not entirely removed.

In relation to other insect and fungoid enemies of the sugar cane, the "Gros Moutouc" (Oryctes tarandus), has been sensibly less in evidence on certain properties in Savanne where it was formerly a serious pest ; this result is due to repressive measures adopted by the

estates. The parasitic enemy of this insect (*Scolia Oryctophaga*) imported from Madagascar in 1917, has probably established itself in the Colony but so far is not in evidence as a control of Oryctes on cultivated lands.

Other insect pests of the cane have not been markedly in evidence during the year, but mention should be made of the occurrence of an infection of Phytalus Smithi over a small area of cultivated land at Rivière du Poste in Savanne. This infection was detected in August 1919 and probably dates back for a number of years ; owing to climatic conditions the insect has multiplied slowly ; control measures were instituted as soon as the pest was discovered and it is hoped that in due course the outbreak will have been satisfactorily dealt with.

Root disease of sugar cane has again been in evidence on certain properties but to a rather less extent than in former years, probably in consequence of the application of the remedial measures which had been recommended by the Department of Agriculture.

Experimental Investigations in relation to the Sugar Industry in Mauritius.—Experimental Investigations on certain phases of the Sugar Industry have been continued during the year by the Department of Agriculture, the principal have comprised the continuation of trials with manures and with varieties of canes. The result of the series of manurial experiments conducted between the years 1913--18 have been published in the form of a bulletin. The trial comprised numerous repetitions of experiment with the different manurial combinations on plots 1/20th of an acre situated in the fields of sugar estates in the Colony. The plan adopted in laying out these experiments is in accordance with practice accepted in experimental work all over the world, the size of the plot being in accordance with the determinations of Wood, Harrison and others who have demonstrated that plots of these dimensions are the most satisfactory for experimental purposes.

The results of these trials have shewn that applications of Sulphate of Ammonia and Nitrate of Soda to canes which have received dressings of pen manure may produce substantial increases in yield but that these increases are dependent on the presence of other limiting factors. The commercial profit is a question of the relative value of manures and canes.

The effects of Potash and Phosphate are more variable.

Fresh trials are being laid down to investigate a number of points arising from these experiments. In relation to cane varieties, the work of investigation has been defined and systematised and now comprises the raising of seedlings ; their selection and trial on one hole plots in the field ; the further selection of these and trial of the best on six hole plots ; re-selection and trial of the most promising on 30 hole plots at Réduit and Pamplemousses and final re-selection and trial on co-operative 60 hole plots situated on estates throughout the Colony. This is combined with the importation and trial of promising seedlings from other parts of the world.

During 1918, this system was got into working order and there exist nine stations in connection with these trials at different points of the Colony. The work of raising and trying out seedling canes is of high importance, since it affords the only means known of replacing standard varieties which, after prolonged cultivation, inevitably tend to exhibit degeneration.

As the result of the work which has been accomplished, the Department of Agriculture is now in a position to recommend with some degree of confidence, a number of new seedling canes, which it is hoped to place at the disposal of the planting body during 1921.

SUBSIDIARY AGRICULTURAL INDUSTRIES

Aloe Fibre.—The production of Aloe Fibre from *Furcræa gigantea* is the most important subsidiary industry. With the object of improving the fibre, a Corona Fibre Machine was introduced into the Colony in 1915 and experiments were carried out with it during 1916 and the following years. The results of these experiments have been fully summarised in previous reports, and further experiments made in 1918 confirm the results. They show that the machine can deal successfully with leaves of Furcræa and turn out a class of fibre superior to that produced by the local "grattes." The machine however is primarily designed to handle Sisal and not Furcræa, and in dealing with the latter crop the output of the machine is very materially reduced.

The important point arises whether Sisal, properly cultivated on the lines adopted in East Africa and elsewhere, might not in the end prove more remunerative than Furcræa as at present cultivated in the Colony.

To investigate this question, an area of 30 acres of Sisal has been planted by the Department of Agriculture on Crown Lands at Plaine Lauzun. In the experiment undertaken a feature will be made of the cultivation of intercalary crops between the rows of young sisal plants since it is believed that working in this way, the expenses of establishing plantations of Sisal can be reduced to a minimum, and at the same time satisfactory conditions of growth can be induced for the main crop.

The market for aloe fibre has been very limited. At the end of 1920 quotations for fibre ranged from Rs. 250 per ton for fine quality up to Rs. 350 per ton for prime. The market has been adversely affected by the exchange.

Exports of aloe fibre for the past 5 years have been as follows :—

1916	...	7,118 bales
1917	...	5,647 „
1918	...	1,974 „
1919	...	10,139 „
1920	...	3,500 „

Production of Alcohol.—The production of rum from the waste molasses of the Sugar Cane Industry forms a not unimportant subsidiary industry. At present, there are three distilleries operating in the Colony; formerly they were much more numerous.

The methods of production are in general capable of considerable improvement.

The total production of Alcohol for the past six years, according to Treasury Returns, is as follows:—

1919–20	...	1,666,000 litres	1916–17	...	1,883,607 litres
1918–19	...	1,529,315 „	1915–16	...	1,410,174 „
1917–18	...	1,602,414 „	1914–15	...	1,091,485 „

A certain portion of this is exported, principally to the Seychelles and Rodrigues, a further amount is denaturated for domestic and industrial purposes; the greater part however enters into human consumption locally.

The majority of the molasses produced in the Colony is at present used as a fertiliser. Of late years, increased attention has been devoted to the possibilities of alcohol for power purposes. A number of attempts have been made to utilise alcohol and mixtures of alcohol and ether as a substitute for motor spirit, but so far, for various reasons, these have not been attended with a very great amount of success. There is however undoubtedly great scope for very large developments in the production of alcohol for power from the waste molasses of the sugar industry, while the fertilising constituents of the molasses so employed need not be lost as they are capable of being returned to the land as spent liquors after distillation.

During the year, the manufacture of alcohol in the Colony has been made the subject of investigation by a Commission appointed by the Governor, the scope of the enquiry including both the consumption of the alcohol for drinking and its industrial application. The Report of the Commission appeared at the end of 1920 in respect of the use of industrial alcohol for the purpose of providing power, the Commission laid very great stress on the importance of this matter to the Colony; they also emphasized the indifferent quality of distillery work as at present carried on in Mauritius.

The composition of exhausted molasses produced in the Sugar Factories of Mauritius has recently been made the subject of a special study in the Chemical Laboratory of the Department of Agriculture with a view to facilitating its employment for the production of industrial alcohol. A Bulletin on this subject is now in the press.

Vanilla.—This crop is cultivated on a limited scale in the Colony but has declined of recent years although during 1920 the market showed some improvement, market value being quoted at between Rs. 7. and Rs. 10. per kilo according to quality.

Tobacco.—For some years past, an extensive series of experiments has been conducted by the Department of Agriculture on the cultivation and preparation of the variety of tobacco known as "Tabac bleu" which is extensively imported into the Colony from the neighbouring island of Réunion. These investigations have comprised planting trials, experiments on the cutting of the tobacco in "carottes" and the preparation and marketing of cigarette tobacco prepared therefrom. The experiments have been completely successful in demonstrating that tobacco of this type of satisfactory quality can be produced in the Colony.

In consequence a scheme for the development of the industry was set on foot during 1920, whereby about 25 acres of Crown Land were leased to suitable applicants for the purpose of tobacco cultivation; an additionnal inducement being offered by the remission of the tax required to be paid on such lands; intending cultivators taking up land under this scheme are required to sell their tobacco to Government for manipulation in the Government Factory which has now been permanently established in Port Louis. This factory operated during the year and has for some time past been putting out small but regular supplies of locally produced tobacco which meet with a ready sale.

The progress that has been made must be regarded as encouraging and given a continuation of the present policy there seems every reason to hope that a not unimportant minor industry in the production of tobacco for local consumption will in due course be built up.

Tea.—The production of tea in Mauritius has for many years been a minor industry of some importance. The local production of tea for the past 31 years has been as follows :—

Period		*Local Production*
1888–1897	...	5,000 kilos
1898–1907	...	32,000 „
1908–1910	...	35,000 „
1911–1915	...	38,000 „
1915–1917	...	30,000 „
1917–1919	...	32,000 „

Owing to relative cost of labour there seems no prospect of Mauritius Tea ever being able to compete successfully with the produce of India and Ceylon on the open market. Locally however the case is different. Tea growers in Mauritius enjoy protection on the local market to the extent of 30 cents per lb. owing to the import duty imposed on produce from other countries, and there would appear to be scope for expansion of the industry. There is however a large importation of tea.

Reports on Mauritius Teas tend to show that they differ from the teas of India and Ceylon in flavour, their taste having been characterised as peculiar by the Imperial Institute.

Investigations made by the Department of Agriculture appear to indicate that this difference may be overcome, at any rate in part, by care and attention during the process of manufacture ; in which case it should be possible to increase considerably the demand for the local product.

Limes.—In 1917, the Governor directed the attention of the Board of Agriculture to the possibilities of developing the cultivation of Limes in the Colony, and an experimental area of between 20 to 30 acres has been planted by the Department in Flacq.

Coconuts.—The planting of coconuts appears to offer considerable scope for development in the Colony. This crop forms the staple industry of the Oil Islands (dependencies of the Colony). Extensive plantations have now been established on Pas Géométriques on the windward coast of Mauritius. The appearance of these plantations is on the whole distinctly promising. There would appear to be room for considerable further extension both in Mauritius and also in Rodrigues, where experimental plantations are being made by the Government. The demand for coconut oil and copra is practically unlimited.

Food Crops.—The necessity for the increased cultivation of food crops became less urgent during the year. Besides the very high prices which have obtained for sugar and for canes have proved so attractive that efforts to increase the production have been considerably discounted. Early in 1919, the area under food crops in the Colony was estimated to be 19,645 acres. This represented an increase of 113% over the area planted in 1917. In 1920, many of the sugar estates reduced their food crop plantations while the high prices offered for cane proved an irresistible attraction to many of the small planters who have substituted cane for food plantations. It is estimated that at the end of 1920 the area under cultivation in food crops and vegetables did not exceed 7,000 acres and may be less, exact figures are not yet available.

The scheme of short term leases of vacant blocks of Crown Land to groups of individuals for the growing of food crops has been maintained and has continued to give satisfactory results. The total area of Crown Lands leased in this way amounted to approximately 500 acres and in 1920 resulted in the production of about 200 tons of maize plus a considerable quantity of patates, manioc and other food crops.

The Maize Sécherie was again operated during the year and 107 tons of grain were treated ; of this 92 tons were purchased from small planters, the remainder being received from Government Establishments.

Live Stock.—The question of the increased production of Live Stock has attracted a good deal of attention during the year. The general census of cattle conducted by the Department of Agriculture in 1918 shows that since 1914, the number of head of cattle had diminished over 8,000 mainly on account of the demand for animals as food consequent on the irregularity of supplies of bullocks from Madagascar.

The position during the year 1920 improved considerably in so far as the last factor was concerned and the supply of cattle from Madagascar was throughout the year carried out with much greater regularity. The restrictions on the slaughter of young animals provided under Ordinance No. 1 of 1918 were rigidly enforced through the agency of the Department of Agriculture and have also materially contributed to the improvement of the position.

Increasing interest has continued to be manifested in the improvement of breeds of stock, both for draught and milking purposes. The initiative taken by the Department of Agriculture whereby a Stock Farm for pure bred cattle was established at Réduit is now bearing substantial fruit and a considerable number of half bred Ongole, Hissar and Mysore cattle are to be found on estates while considerable amelioration is being effected in the breeds of milch cattle by the introduction of stud bulls of good milking strain. Numerous importation of cattle of good strain were also undertaken by private breeders during the year while the second sale of pedigree stock was held at the Government Stock Farm in November 1920. The proceeds were Rs. 11,000.

An important advance was recorded during the year by the inauguration of the Mauritius Stock Breeders' Association, having for its object the improvement of Stock Breeding in the Colony and the representation of the interests of stock owners.

Animal diseases have been little in evidence during the year. There has been no serious outbreak of Surra while Piroplasmosis has been practically entirely absent. Further extensions in the dipping of cattle have been recorded and there is every reason to believe that the continued improvements in the general health of cattle in the Colony is at any rate in part due to this. During the year the Government put into force a scheme whereby advances

to assist in the erection of dipping tanks on approved properties could be made to planters while plans were also passed for the erection of six public dipping tanks at different points in the Colony.

Salt Industry.—The manufacture of salt in salines by the evaporation of sea water, though not strictly speaking an agricultural industry, possesses a certain degree of importance in the Colony and may be conveniently dealt with under this head. There are four salines at present operating in Mauritius from which the total production averages about 1,800 tons per annum. The salines themselves consist of a series of basins into which sea water is admitted and concentrated by the heat of the sun. As the solution becomes more concentrated, it is run into successive basins and in the last of these crystallisation takes place.

CO-OPERATIVE CREDIT SOCIETIES

Co-operative Credit Societies were first established in Mauritius in 1913 and their working is regulated under Ordinance 4 of that year. The plan on which these Societies are worked follows closely that which has been established in India ; the system may now be regarded as firmly established in the Colony as is proving itself thoroughly well adapted to the requirements of a considerable number of the small planters. At the end of 1920, 32 Societies had been registered and were without exception working satisfactorily. On June 30th 1920, the total amount of Working Capital to the credit of the Societies was Rs. 365,857 of which Rs. 129,313 represented Share Capital and Rs. 66,222 Reserve Fund. The total membership of the Societies on the same date was 3,072. During the latter part of the year, considerable additions were made to the number of Societies and to the total membership, six new Societies being registered between August and December 1920. The result is largely due to growth of appreciation of the advantages of the system in the minds of small planters and is not the result so much of direct propaganda on the part of Government.

HIGHER INSTRUCTION IN AGRICULTURAL SCIENCE

The School of Agriculture maintained by the Department of Agriculture continued operations during the year and arrangements were made for the admission of three students each year instead of two. The training afforded is assimilable to that which obtains in Agricultural Colleges in other countries but in view of the importance of the Sugar Industry special attention is directed to requirements in connection with this crop. The course comprises courses of lectures and laboratory work extending over three years. There is great need for improvement and extension of the facilities afforded and it is to be hoped that at some future date the nucleus provided by the existing School of Agriculture will pave the way for the establishment of a College of Agriculture and Sugar Technology commensurate with the size and importance of the Agricultural Industries of the Colony.

In this connection, it may be mentioned that examinations for the Registration of Agricultural Chemists under Ordinance 17 of 1917 were held in June 1920 in accordance with usual practice.

RODRIGUES

The Island of Rodrigues is the most important of the dependencies of Mauritius. It is a little over 9 miles long and somewhat less than 4½ miles broad and is situated 345 miles East of Mauritius.

During the past two years the improvement of agricultural conditions in Rodrigues has been made a special study by Government. Official visits were made to the Dependency by the Assistant Director of Agriculture in December 1919 and by the Director of Agriculture in December 1920. It appears clear that very considerable scope exists for the improvement in the extension of agricultural industries. Crops likely to succeed are : coconuts, limes, tobacco, cotton and maize ; the principal existing industry, viz. :—stock raising is also capable of amelioration and extension. With the latter object in view, a stud bull was introduced into the Island during the year and also a small herd of selected donkeys with the object of endeavouring to start a small donkey raising industry. Proposals are now under consideration for the establishment of a permanent branch of the Department of Agriculture in the dependency which it is hoped will facilitate the development of this interesting Island.

GENERAL

Among special agricultural events, may be recorded the holding of the second of the series of Agricultural Shows for small planters which was organised by the Department of Agriculture and took place at the Cinema Hall, Rose Hill, early in August 1920 and of a Horticultural and Industrial Exhibition under the auspices of the Société Horticole which took place with success at the Hotel de Ville, Curepipe in October, 1920.

PART II

WORK OF THE DEPARTMENT OF AGRICULTURE DURING THE YEAR 1920

Staff Changes

The work of the Department of Agriculture has again been seriously handicapped by numerous staff changes.

Mr. G. G. Auchinleck, Assistant Director of Agriculture, proceeded on leave of absence in February 1920 ; in May 1920, he was appointed Divisional Agricultural Officer for the Southern Provinces in Ceylon.

Mr. D. d'Emmerez de Charmoy, Entomologist, acted as Assistant Director of Agriculture until the end of the year and Mr. C. D. d'Avoine, Scientific Assistant in the Chemical Division, acted as Chemist during the same period.

Mr. H. Robert, Statistician of the Department of Agriculture resigned his appointment to take up a position in private employment in August 1920.

Mr. Maxime Kœnig, Assistant of the Royal Alfred Observatory, was appointed to act as Statistician in September 1920.

Mr. F. Birkinshaw, Agricultural Superintendent, left Mauritius to take up his appointment as Assistant Plant Inspector in the Federated Malay States in February 1920.

In December 1920, the Secretary of State appointed Mr. A. S. Clegg to the vacant post of Agricultural Superintendent but up to date, Mr. Clegg has not arrived in the Colony.

Mr. Ph. Cantin, Scientific Assistant in the Division of Biology, resigned his appointment to take up a post in private employment in November 1920.

Mr. R. Casse, Officer in charge of Beetle Destruction, resigned his appointment in July 1920. He was succeeded by Mr. G. Bestel who however resigned in November 1920 ; Mr. A. Delord, Manager of the Maize Sècherie was appointed to succeed him.

Mr. J. Toulorge was appointed in the temporary capacity as Chief Overseer of the Department in October 1920.

Mr. R. Toureau, Chief Clerk of the Department proceeded on leave of absence in August 1920 ; Mr. Y. Lefébure acted as Chief Clerk during Mr. Toureau's absence on leave. Mr. H. Nina, 6th Class Clerk in the Department, acted as 5th Class Clerk in the place of Mr. Lefébure.

Miss U. Bouloux and Mr. B. Nuckcheddy were appointed as Lady Typist and Writer in the Department.

Mr. A. Beeharry, 2nd Overseer Pamplemousses Gardens, was seconded for duty as Overseer, Abercrombie Nursery.

During the year proposals were approved for the strengthening of the Staff of the Department by the appointment of a Botanist but up to the end of the year no appointment has been made.

The work of the various divisions of the Department are reviewed in the following pages :—In accordance with instructions received from His Excellency the Governor the form of the report has been modified and the reports of the different Divisional Officers are subjoined in the form of excerpts instead of as previously being printed *in extenso* as Appendices.

CHEMICAL DIVISION

The Acting Chemist reports as follows :—

The following samples were analysed by the Chemical Division during the year :—

	Samples	*Dosages*
Artificial Manures	9	19
"Fumiers & Guanos" (including mixtures)	42	152
Dipping Solutions	35	35
Cane Juices	1,130	2,289
Molasses...	18	93
Coal	5	30
Miscellaneous	31	76
Total ...	1,270	2,694

A new feature of the analytical work detailed above was the testing of dipping solutions, samples of which were fairly abundant.

Cane Experiments

As usual cane varieties grown for purposes of selection at Réduit, Pamplemousses and other Experimental Stations were analysed in the Laboratory. The results for the Stations other than Pamplemousses and Réduit were communicated to the respective interested parties as soon as they had been calculated.

" Contrôle Mutuel " Returns

Twenty-two Usines contributed to the " Contrôle " and five sets of returns were received, compiled and distributed to these factories during the crop. The returns for the final figures will be completed shortly.

Educational

The Chemist and the Senior Scientific Assistant delivered altogether 38 lectures to the Students of the School of Agriculture. In July the examination in Practical Chemistry for the Registration of Agricultural Chemists was held in the Laboratory of the Chemical Division under the supervision of the acting Chemist.

Work on Molasses

The control of the various operations carried out in a distillery for the preparation of Alcohol from Molasses, was undertaken and several important points were observed in connection with the yield of alcohol.

In order to gain some knowledge of the composition of molasses produced in the Colony and also to provide a general working basis from the data already obtained regarding the production of alcohol in practice, representative samples of molasses were collected from 17 Usines and analysed.

Further, the manurial value of molasses, as measured by the amount of its fertilising constituents, was ascertained by means of three complete analyses.

Results have been incorporated in a Bulletin which will be published shortly.

BIOLOGICAL DIVISION

The Entomologist reports as follows :—

Phytopathology

Cryptogamic diseases of cane were little in evidence, only a few sporadic cases of black smut were recorded. Root disease which was somewhat prevalent in previous years was not reported to exist in a severe degree on any estate.

Several cases of bacterial diseases of the heart of the cane occurred in 1920 on two estates but was as in former years located to small areas.

The researches on the disease of Filao *(Casuarina equisetifolia)* were continued without bringing to light any specific micro-organism which could reproduce the disease experimentally. An experimental plot was selected at Grand River South East for trials relating to the transmission of the disease under natural conditions.

Field investigations respecting various methods of prophylaxy and treatments were continued on the experimental plot at Le Bouchon.

Sugar Deterioration

A series of experiments has been carried out in various railway stores with a view to finding out the conditions liable to influence deterioration of raw sugar in storage. Although no definite opinion can be expressed up to now there is reason to believe that further experiments will lead to a satisfactory solution of the problem.

Insect Pests

Pests of minor importance to sugar cane, fruit trees, economic and ornamental plants have been reported during the year and dealt with as usual.

The mango cecidomyid fly has spread over a much wider area and its presence has been noticed in various districts and at the Royal Botanical Gardens at Pamplemousses where several trees have suffered severely from its attacks.

Tiphia Parallela

This parasite, was transferred to Joli Bois, Rivière du Poste, at the time of the discovery of Phytalus in this locality in 1919, and is now established all over the infected area.

The Campaign against Phytalus Smithi

The cost of the campaign was defrayed from July 1920 by a special export tax on sugar of two cents of a rupee, which rendered a sum of Rs. 49,000 available for the work.

Considerable extensions of the work of patrol collection at the periphery were undertaken and some 450 to 500 labourers were employed to check the spread of the pest. This extension of the work necessitated increase of the staff and the services of additional inspectors were secured to control the work of the gangs.

The decrease in the number of insects destroyed, already recorded in previous years, was again noticeable in 1920.

Several estates where the pest was still very persistent in 1919 were observed to be nearly free from it in 1920, and in most of the original centres of infection, it is at present very slightly in evidence ; it still exists however in numbers at Petite Rosalie and on the upper part of The Mount Estate.

Number of Beetles destroyed

The number of Beetles destroyed in the infected area at Pamplemousses was 23,995,090 and the expenditure incurred, Rs. 26,513.74.

A new post was created for the destruction of Phytalus at Joli Bois where engaged labour was secured. The number of insects destroyed there was greater than in 1919 and amounted to 1,139,575 while the expenditure was Rs. 2,662.12.

Plant Inspection

This service was definitely placed under the charge of the Entomologist during the year.

Packages were examined at the Customs and at the General Post Office. Fumigation and treatment of consignments of plants were carried out.

Poultry

Additional breeds were received from South Africa during the year but unfortunately some were stolen in August. Eggs had however been incubated and this permitted of the reconstitution of the pens.

A further order for breeds not existing in the Colony has been placed in South Africa.

Educational

49 lectures were delivered to students throughout the year by Officers of the Division.

VETERINARY DIVISION

The Government Veterinary Surgeon reports as follows :—

Importation of animals

During 1920 the number of imported animals was 15,541 representing a value of more than a million rupees. The following statement will show the different classes of animals introduced in the Colony :—

Madagascar Bullocks	...	9,931
Goats	...	2,389
Pigs	...	1,310
Sheep	...	1,169
Mules	...	258
Horses	...	169
Poneys	...	218
Donkeys	...	4
Dogs	...	6
Cows and Bulls ...	...	81 (Stud animals)
Miscellaneous ...	...	10

A number of dogs were examined on board different Schooners and Steamers but no landing was allowed, the animals not being accompanied with the necessary certificates.

Inspection of Government Animals

Animals of the following Departments were attended during the year :—

Agricultural Department.—One donkey, two goats, one mare.

Forest Department.—One donkey.

Barkly Asylum.—Three cows.

Medical Department.—One mule, two Madagascar Bulls.

Police Department.—One mare, two horses.

Stud Animals.—The Bulls of the Department have been stationed at Beau Rivage, Les Salines, St. Antoine and Britannia, and the results were satisfactory. A Jersey Bull and Heifer have been received for the Department for breeding, from the Union of South Africa.

A Normandy Bull and 12 Catalonian donkeys were imported from South Africa and sent to Rodrigues for breeding purposes.

Contagious Diseases

Surra.—One herd which was affected with the disease has been tested with negative results and released from quarantine. Three cases in districts were detected on two horses and one mule ; affected animals have been slaughtered by their respective owners.

Epizootic Lymphangitis and Piroplasmosis

No cases of these diseases occurred during the year.

Tuberculin Tests

Animals of several estates have been tested with Tuberculin. The number of animals tested was 158 including cows, heifers and bulls (breeding herd). 20 animals reacted to the tests and were slaughtered with the owners' consent and on post mortem, tubercular lesions detected. 23 cows and bulls imported from Australia, and being not accompanied with certificates relative to Tuberculosis, have been tested before delivery to their owners. One cow reacted to the test and was subsequently slaughtered, post mortem detected tubercular lesions.

Meat Inspection

On two occasions, illegal slaughtering has been detected at Roche Bois, Municipal Abattoir ; carcases of under age animals were seized and forwarded to the Poor Law Officer and owners prosecuted according to Cattle Restriction Ordinance.

During the year 44 cows, bulls and heifers, under age have been allowed to be slaughtered, these animals being sterile or affected with incurable diseases or accidentally injured. On two occasions the seizure of carcases was maintained in different slaughter houses ; the meat was subsequently destroyed.

Lectures

A series of 12 lectures on Farm Animals was delivered to the 2nd Year Students of the School of Agriculture.

Cases of Cruelty

Three cases of cruelty were examined at the request of the Police Department, two on mares, and one on a bullock, and certificates were forwarded to Inspectors.

STATISTICAL DIVISION

The Statistician reports as follows :—

The Blue Book Statistics relating to Agriculture were completed and sent to Government.

Statistical data were supplied, as usual, to the International Institute of Agriculture, Rome, to the Board of Trade, the Colonial Secretary's Office, the Immigration Department, &c.

A Bulletin was prepared and published on the cost of production of sugar. The collection of detailed information relative to the cost of manufacture of sugar in factories was commenced and will be analysed and published in due course, if possible.

An analysis of returns of yields of various experimental plots was undertaken and will be published in bulletin form next year. The usual crop forecasts were prepared and submitted for publication.

The Meteorological Service of the Department was reorganised and placed under the control of the Statistician with a view to systematising the work of preparing crop estimates and of studying regional correlation between meteorological elements and crop returns.

Secondary stations are in existence at the Royal Botanical Gardens, Pamplemousses ; the Department of Agriculture, Réduit ; the Nursery Gardens, Curepipe ; to these it is intended to add stations at La Ferme, Black River ; Abercrombie, Port Louis ; Mahebourg ; and Rivière du Poste, Savanne.

These stations will send in returns of bi-daily observations of maximum and minimum temperatures, temperature of the air, and evaporation and rainfall.

DIVISION OF EXPERIMENT STATIONS

Central Experiment Station

Experiments with canes.—Experiments with varieties of sugar cane were continued during the year on lines previously established. Variety experiment plots were reaped at Réduit, Pamplemousses, Long Mountain, Britannia, Beau Vallon, Highlands and Labourdonnais, the plots comprising in the majority of cases experiments with plants and ratoons.

New experimental variety plantations were made at Britannia, Beau Vallon, Queen Victoria, Labourdonnais, Réduit and Pamplemousses.

Manurial experiments were reaped at Bagatelle, Britannia, Mon Désert (Carié) and Terracine.

Manurial experiments were laid out at Britannia. Check experiments were also reaped at Highlands to test the variation liable to occur in the method of experimentation with canes. Fourteen hundred seedling canes were raised and of these 935 were planted out as one hole trials at Pamplemousses and Réduit. 216 seedling canes were selected from one hole trials at Réduit and Pamplemousses from 1919 sowings and planted out in six hole plots at Réduit and Pamplemousses, while 55 canes from six hole trials planted 1918–19 were selected for trial on 30 hole plots. In all 1896 plots were reaped experimentally and of these 1130 samples were crushed in the experimental mill at Réduit and the resulting juices sent to the Chemical Division for analysis.

The following canes were introduced from Barbados and planted out in the nursery for propagation : B. H. 10/12, B 6032, B 7924, B 2471, B 11569. Cuttings of selected varieties of cane were distributed to planters. Selected varieties of cane were packed and despatched to the following places : Demerara, Louisiana, Réunion, Madagascar.

A Bulletin was issued during the year giving the results of the variety trials conducted during 1918–1919. The most promising varieties under experiment at present are : D. 109, B. 6308, R. P. 6, 33/231, 35/55, 55/1182, R. P. 8, B. 6450, R. P. 73, 75°°.

The yield of canes at the Central Experiment Station for the year 1920 was 132.320 tons. The reaping of the crop was completed on December 5th. The canes were sent to Trianon Estate.

Experiment with other Economic Crops

Experiments with varieties of food crops were carried out as follows :

Maize.—The continuation of the breeding by selection trials conducted in pre-			
Sweet Potatoes.—Trials with	48	varieties.	[vious year.
Manioc	,,	44	,,
Yams	,,	12	,,
Tannias & Eddoes	,,	8	,,
Guinea Corn	,,	2	,,
Beans	,,	3	,,
Ground nuts	,,	12	,,

In addition larger scale trials were carried out with four selected varieties of sweet potatoes, with selected strains of maize and with selected varieties of manioc.

The produce of these experiments was fed to stock at the Stock Farm.

The results of experiments on the selection of maize and with varieties of food crops were published as Bulletins during the year.

The experiments were duplicated at the Experiment Station at Pamplemousses while smaller scale trials with selected varieties of sweet potatoes and manioc were carried out on the demonstration plots at Mahebourg and Long Mountain. As the result of these experiments strains of maize have been evolved which are distinctly more prolific than those ordinarily cultivated in the Colony while of other food crops certain imported varieties stand out as superior to the ordinary local kinds.

It should be added that trials have also been conducted on the raising of new varieties of sweet potatoes and manioc from seed. 19 new varieties of sweet potatoes and 376 varieties of manioc having been produced in this way and are now under experiment.

Stock Farm.—The Stock Farm has continued to make steady progress during the year. One pure bred Jersey Bull and one pure bred Jersey Cow were imported through the agency of the Union of South Africa Department of Agriculture in August, also one pure bred Holstein Bull in December. In addition one ¾ bred Normandy Bull and one pure bred

Afrikander Bull were procured with the object of stationing them eventually in Rodrigues. The Normandy Bull was shipped to Rodrigues in December.

A herd of 12 Catalonian donkey mares and one Catalonian Jack donkey was also imported with the object of inaugurating herd breeding of donkeys in Rodrigues. The animals were sent to Rodrigues in September.

The following births were recorded at the Stock Farm.

2	pure bred	Hissar bull calves.
1	„	„ heifer calf.
1	„	Ongole Heifer.
1	„	Holstein Friesland Bull.
1	„	„ „ heifer.
1	„	Jersey Heifer.
2	¾ bred	Holstein Bull calves.
1	Hissar and Mysore bull calf.	
Total	—10 animals	

Indian bulls stood for services at the following stations.

Ongole Bull ,Hathi I ... St. Antoine, April–June. Beau Rivage, August–October
Hissar Bull, Amir I ... Les Salines, April–June. Britannia, August.
Mysore Bull, Maharajah I .. Britannia, September.

The following services were recorded :

Holstein Friesland bull, Rivenhill Chieftain. ...	71
„ „ Reduit Chieftain. ...	1
Ongole Bull, Hathi I.	35
Hissar Bull, Amir	15
Mysore Bull, Maharajah I.	3
Mysore Bull, Nizam II.	1
Total	—126 services

The second annual sale of stock was held at the Government Stock Farm on November 11th when 13 cattle and 7 sheep were sold. The gross proceeds realized Rs. 11,000.

Owing to increase in the number of animals the provision of new buildings was rendered necessary, and the erection of a new stable capable of accommodating 8 animals was begun in October. An incinerator for the destruction of rubbish was also erected and worked satisfactorily.

The health of the animals remained satisfactory. All animals were passed through the dip once a week. Fodder as usual consisted of maize and acacia or hominy chop and acacia with cane tops and grass.

Buildings and Roads.—The main office buildings and laboratories were painted externally and internally as also were the Director's and Assistant Director's quarters. A new kitchen was erected at the Assistant Director's quarters. Improvements to certain roads were undertaken aud a new road made to the Stock Farm.

Royal Botanical Gardens, Pamplemousses

Economic Section.—The economic section was maintained in good order and the customary experiments with canes and with other economics carried out. Approximately 2 acres of tobacco were planted, the produce being sent to the Tobacco Factory, Port Louis for carotting after drying in the Sécherie. The actual yield was 15,668 kilos of green leaves.

The tobacco carotting work formerly carried on at Pamplemousses was transferred to the Tobacco Factory at Port Louis.

The lime and areca plantations continued to make fair progress.

Ornamental Section.—The improvements in various sections of the grounds were continued. The eastern boundary wall was rebuilt. Parts of the roads at the centre of the gardens were reimetalled. 4½ acres of land were cleared and grassed over in the area formerly in Sisal, and subsequently planted up with varieties of citrus trees imported from South Africa.

Gaps were supplied in the specimen plantation of essential oil producing plants, specimen plantations of avocado pears and of kola were also laid out. The old Lily pond was filled in and grassed over. The Bassin Carré was cleaned in May and June and the material removed used for filling depressions near the Eastern Boundary.

One new kiosk was built in the ravine ; the old kiosk in the fernery section was dismounted, two other kiosks were repaired and rethatched. Bridges connecting the islands in the Grand Bassin were repaired as required. A new bridge was erected over the Ruisseau Citron. A number of unsightly stumps and bushes were removed while uneven ground was levelled and grassed over at several points.

The conservatory stock was overhauled and repotted.

Attention was given to lawns and walks and an effort made to improve the general tidiness and appearance of the gardens, considerable difficulties were however experienced owing to labour shortage towards the end of the year.

49 herbarium specimens of plants, the identity of which had been lost were prepared and sent to Kew for identification.

Seeds and cuttings were supplied to 47 persons locally and to correspondents in foreign countries as follows : Botanical Gardens Kew, Rhodesia, Singapore, Saigon, Egypt, Philippine Islands, India, Ceylon, Seychelles, Porto Rico, U. S. America.

Seeds were received from C. Wragge Esq., New Zealand; from the Botanic Gardens Buenos Ayres, and locally from Gabriel Regnard Esq.

Visitors.—15,000 persons visited the Gardens during the year and 174 picnics were held in the grounds.

Nursery for Economic Plants, Abercrombie.

This Institution which was inaugurated for the supply of fruit trees and economic plants was got into working order during the year; the laying out of the nursery, erection of nursery shed and office and the installation of water supply being completed, necessary drains were dug to carry off surplus water, and the southern half of the nursery planted up with growing stock for propagation. The stock established included a collection of varieties of citrus fruit imported from South Africa, a collection of grafted mangoes and of litchis. The northern half of the nursery was laid out with nursery beds for propagation work.

The raising and distribution of plants was commenced in the month of April and by the end of the year the following had been sent out:—

Litchi layers	26	Brought forward	341
Grafted mangoes ...	16	Limes	449
Seedling „	29	Coffee	766
Avocadoes	90	Fruit de Cythère ...	30
Breadfruit	20	Ananas	75
Seedling Oranges ...	122	Jak fruit	45
Budded Oranges ...	4	Cloves	24
Mandarine Oranges ...	30	Kola	15
Citrus	4	Pine apples	59
		Miscellaneous	16
Carried over	341		1,820

For the purpose of control, the Nursery was temporarily placed under the charge of the Overseer of Pamplemousses Gardens and the 2nd Assistant Overseer seconded for duty at the Nursery.

Curepipe Gardens

Economic Section.—The Tea plantation was periodically forked and mulched and severe pruning in July gave satisfactory results. The bamboo hedges around the plantation were kept well trimmed during the year.

The Upland Rice plantation did better than in previous years. Seeds were selected from 11 promising varieties for replantation.

Ornamental Section.—The flower garden and rosery section were maintained in good order. The Fernery is one of the prettiest corners of the Garden and is visited by many people.

The laying out of a second fernery on an adjoining piece of land was commenced. The indigenous plants planted on the lawn near the old Camphor plantations have been labelled and are doing well.

Educational Section & Model School Garden

The educational section was maintained in good order during the year, demonstrations were given therein by the Senior Master of Chemistry to pupils of the Royal College.

As regards the model School Garden, the beds were well kept and a good show of vegetables, economics and ornamentals was obtained. Two diplomas were obtained for its products (sweet potatoes and beans) at the Agricultural Show held at Rose Hill in August.

Nursery work and plant sales were maintained. Eight new varieties of roses were propagated during the year. A plant house was erected by the Public Works Department to facilitate nursery work.

The kiosk in the Ferney was repaired and repainted while all paths and roads &c. were kept in good order.

Le Reduit Grounds

Grounds.—The systematic felling of trees of inferior species over the wooded areas and replanting with Eucalyptus and Conifers was begun by the Forest Department.

The appearance of a portion of the grounds close to and facing the northern side of Government House was improved by the erection of a fountain and two lines of balustrade together with the laying out of new flower beds.

The tennis courts, golf course and all grass areas were kept regularly mown and in good condition.

The flower garden and ornamental sections were kept up to the usual standard of neatness and efficiency. The show of hollybocks in beds between the months of August and November deserves special mention.

From the Kitchen Garden regular supplies of vegetables were maintained throughout the year.

Rainfall

The Rainfall at the Experiment Stations and Gardens was as follows:—

Royal Botanical Gardens, Pamplemousses	55.89	inches
Reduit Central Experiment Station, and Government House Grounds	55.19	„
Curepipe Gardens	122.19	„

DIVISION OF AGRICULTURAL INSTRUCTION

Food plantations and Commercial undertakings

Co-operative Credit Societies.—The Agricultural Instructor paid 215 visits to the Co-Operative Credit Societies during the year. Six new ones were inaugurated during the year and there is a prospect of several more being formed in the not distant future.

Demonstration Plots.—The four Demonstration Plots at Montagne Longue, Mahebourg, La Ferme and St. Martin were maintained in good working order and continue to interest the small planters in these localities. They serve as useful points for the distribution of planting material especially of the newer varieties. They form a good object lesson of what can be achieved by proper methods of cultivation.

School Gardens.—Sites were inspected and advice given as to the School Gardens at Plaisance and Bambous.

Instruction in Agricultural Matters to Small Planters

Many visits were paid to the holdings of small planters and advice tendered with regard to cultivation of canes and food crops. In all directions it is admitted that the canes supplied by the small planters are steadily improving in quality. During the year these people have been able to obtain larger quantities of fertilisers than in previous years, and at a more reasonable price. They have not been slow to profit by this, as can be seen by the present appearance of their crops. The part time of the services of the Manager of the Maize Sècherie have continued to be available for agricultural instruction.

Cultivation of Food Crops.—Owing to the high prices the small planters obtained for canes, considerable further areas of land, previously under food crops, had again been put under cane cultivation, and this has led to a marked diminution in the area cultivated in food crops.

Food Settlements.—The blocks of Crown Land devoted to food product schemes have been maintained as well as the Food Settlements of La Ferme and St. Martin. The Agricultural Instructor paid 38 visits to these plots during the year and the work of the Overseer was constantly supervised.

The main plantations in all these food settlements are maize and manioc. Patates are also grown, but not on a large scale. The only food settlement where patates are cultivated on a considerable scale is at La Nicolière, at Powder Mills manioc is grown on a considerable scale, while small vegetables were also cultivated chiefly at Belle Rive, Powder Mills, Mon Boudoir, and Joachim. At Bon Accueil four settlers tried rice on an extent of about 4½ acres, they had some troubles with birds and hares but the results obtained were fairly satisfactory.

During the year a new block of Crown Land was leased to the Sebastopol Co-operative Credit Society at Montagne Blanche.

At La Ferme an area of about 90 acres is under cultivation viz. : 67 acres in maize, 19 in small vegetables and 4 acres in manioc and sweet potatoes.

Out of 33 acres at St. Martin, about 31 are under cultivation viz. : 2 in manioc, one in small vegetables and 29 in maize. The average yield of shelled maize was about 1,500 lbs. per arpent The progress made at La Ferme and St. Martin may be considered better than in the preceding year and much of this progress is due to Co-operative Credit Societies having been formed in connection with these schemes.

A small mill for grinding settlers' maize was erected at St. Martin during the year as well as a small office.

Maize Sécherie.—The Maize Sécherie was visited by the Agricultural Instructor either alone or in company with the Director of Agriculture on occasions during the year.

The Manager reports as follows :—

During the year under review, no maize was received from estates or planters for kiln drying. During the months of May, June, July, Government purchased maize in Mahebourg, Black River, and from tenants on the La Ferme Food Settlement. The operations of the Sécherie are summarised below.

Locality purchased, or from which obtained	Cob corn	Shelling	Equivalent weight shelled corn	Shelled Maize purchased	Total shelled maize	Mean M. C.	Total Expenditure on purchase	Cost of operation Kiln drying
	Kilos	%	Kilos	Kilos	Kilos		Rs. c.	Rs. c.
La Ferme...	21,572	65	14,012	...	14,012	28.1	14,088.22	...
Pamplemousses	...	...	...	2,560	2,560	25.6		
Mahebourg	...	...	...	75,670	75,670	26.4		
Reduit C. E. S. & R. B. Gardens ...	6,592	65	4,282	...	4,282	25 9	Sent for Kiln drying	
Total	28,164	65	18,294	78,230	96,524	...	14,088.22	2,416.66 (Rs. 25.03 p. ton)

In the case of maize purchased in Mahebourg and Black River, the operation was carried out through the medium of a local dealer who was paid a bonus of Rs. 3 per ton.

The maize thus purchased was kilndried and stored in the Storage Bins of the Séchérie. The maize sustained a mean loss in weight of 13.7% and the quantity of kilndried maize obtained was 83.437 kilos.

The storage capacity of the Sécherie (about 50 tons) was found insufficient and during the year storage accommodation for about 150 tons more was provided.

All the bins are lagged with a mixture of clay, tar and cow dung to prevent condensation on the inner sides of the bins caused by sudden change of temperature.

In addition to above 25,047 kilos of maize badly weevilled were received from the Prisons Department for treatment. This maize was first kilndried and subsequently treated with Carbon Bisulphide after which the maize was returned to the Prisons, the cost of operation amounted to Rs. 25.94 per ton.

The meal making machine was used during the year for making meal. In all 4,475 kilos of maize were ground of which 1125 kilos were for the mare and donkeys of Royal Botanic Gardens.

The Department started the sale of the dried maize in October 1920 and the maize fetched an average rate of Rs. 220 per ton. The maize was in very good condition.

Agricultural Work.—During the time the Sècherie was not operating, the time of the Manager was occupied with agricultural work. In this way 30 visits were paid to estates in connection with reaping, manuring, and laying out experimental fields with sugar canes, while 22 visits were paid to the holdings of small tenants of Old Grand Port and Petite Savanne during the year for the purpose of collecting information on agricultural matters and statistical data.

A considerable quantity of planting material of food crops was distributed to the small planters of Grand Port and Petite Savanne.

Tobacco Factory.—The Tobacco Factory temporarily installed at Line Barracks in 1919 was transferred to more permanent premises in July 1920 at the Artillery Barracks' Building which were specially fitted for the work, while the extension of the industry by purchase of green and dried leaves from growers was begun.

The manager reports that the following quantities of leaves were handled at the Factory.

Green leaves	Grown by the Department of Agriculture ..	2648 kilos
	Purchased from private growers	1873 ,,
Dried leaves	Grown by the Department of Agriculture ...	1873.400
	Purchased from private growers	3144.800

From these quantities 752 carottes were prepared and material remains in hand for 50 more

The preparation of cigarette tobacco was carried on during the month of April, May, June, & July, during which time 428 carottes were manufactured.

The yield of *haché* tobacco obtained per cent raw tobacco amounted to 48.2%, a marked improvement on the previous year. During the year the sale of the manufactured produce was placed on a systematic basis, sales being so regulated as to ensure a supply always being on the market. The tobacco is now in regular demand.

To encourage developments, some 23 acres of Crown Land at Plaine Lauzun and St. Thomas have been leased out to small cultivators, the tax exigible on such lands being remitted. By the end of the year, a small quantity of tobacco had been reaped at Plaine Lauzun.

Fibre Industry.

No work was done with the Corona Fibre machine during the year but the plant was maintained in good order. The establishment of a demonstration area of about 30 acres of sisal (*agava sisalama*) at Plaine Lauzun was carried out during the year. The object of this experiment being to test the possibilities of properly cultivated sisal as a crop under Mauritius conditions.

The attempt is being made by means of intercalary crops between the lines of sisal during the first two years of growth to reduce the cost of cultivation to a minimum.

It is the intention to handle the produce of the plot by means of the Corona machine.

The supervision of this undertaking as well as the tobacco plantations has been placed under the charge of the Manager of the Tobacco Factory.

Experimental Lime Plantation.

The experimental lime plantation at Belle Rive has made fairly satisfactory progress. By the end of the year all the subtenants who had been allowed to cultivate in the interlines of the plantation had given up their lots and the plantation placed in charge of a foreman. The most advanced trees yielded a small crop. Some trouble was experienced owing to cryptogamic disease on lower lying parts of the ground. Specimens have been forwarded to Kew for examination and report. Application of quick lime appeared to produce amelioration.

Agricultural Show.

A Small Planters' Agricultural Show was held at Rose Hill at the beginning of August. His Excellency the Governor opened the exhibition ; the show was largely attended and brought forth nearly six hundred exhibits ; the policy of Agricultural Shows for peasant proprietors is meeting with considerable success. It is proposed to hold a similar show in Grand Port during the current year.

SCHOOL OF AGRICULTURE

Four students were admitted to the School of Agriculture in August 1920 after a competitive examination.

Examinations for 1st, 2nd and 3rd year students were held in June 1920. Mr. W. H. Edwards and Mr. R. Laval after completing the prescribed course of training successfully passed the final examination and were awarded the Diploma of the Department.

The following courses of lectures were delivered by Officers of the Department during the year.

Subject	*No. of Lectures*	*Lecturer.*
Agriculture	21	Director
Agriculturel Chemistry—Junior course	38	Assistant Director
Senior course		Assistant Chemist
Botany—Junior course	15	Mr. Ph. Cantin
Senior course	14	
Entomology—Junior course ...	4	Entomologist
Senior course ...	16	Assistant Entomologist
Structure of Farm Animals ...	12	Government Veterinary Surgeon.
Total	120	

5 visits were arranged for 3rd year students to Sugar Estates. Two 3rd-year students worked on Sugar Estates as Assistants in the laboratory during the crop. The application for admission to the School were considerably in excess of the accommodation available and the extension of the size and scope of the School is becoming a question of some urgency.

Considerable difficulties were experienced in relation to the supply of apparatus and chemicals for Science Teaching owing to late execution of orders.

A new lecture room for students was installed during the year by the Public Works Department, the old chemical storeroom being adopted for the purpose.

BOARD OF AGRICULTURE

The Board of Agriculture established under Ordinance No. 30 of 1912 consists of :—

His Excellency the Governor, President,
The Honourable the Director of Agriculture, Vice President.

The following members were appointed under Government Notification No. 277 of December 29th 1919.

The Honourable Sir Henry Leclezio, K.C.M.G.,
,, J. A. Duclos, C.M.G.,
,, M. Martin,
G. Antelme, Esq.,
E. Carcenac, Esq.,
A. Dalais, Esq.,
Th. L. d'Arifat, Esq.,
H. G. Ducray, Esq.,
W. P. Ebbels, Esq.,
L. H. de Froberville, Esq.,
M. Guimbeau, Esq.,
A. Hugnin, Esq.,
T. W. Innes, Esq.,
F. N. Langlois, Esq.,
Edouard Rouillard, Esq.,
G. Regnard, Esq.,
A. Wiéhé, Esq.
Pundit Boleram Mookteram

Upon the resignation of Messrs. M. Guimbeau and G. Mayer, His Excellency the Governor has been pleased to appoint as members of the Board, Messrs. M. d'Unienville and E. Rouillard (Government Notification No. 146 of June 5th, 1920).

In 1920, meetings of the Board of Agriculture were held on March 10th and November 17th.

March meeting.—At this meeting, presided over by His Excellency the Governor, the following printed reports and bulletins were laid before the Board :—

Memo *re* : Advances for erection of Dipping Tanks,
Motor Tractors,
Final Estimate of Crop.
Bulletin *re* : Revised Syllabus, School of Agriculture,
Leaflet No. 13—List of Palmae—1, in Pamplemousses Gardens.
No. 14—Hints on the cultivation of tobacco.
Memorandum on Experimental Station for Irrigation of Sugar Cane
Report on Co-operative Credit Societies.

The following matters received consideration :—

(1) Improvement of Stock condition in Mauritius,
(2) Agricultural Show for Plaines Wilhems,
(3) Introduction of Motor Implements,
(4) Draft conditions for advances for the erection of dipping tanks,
(5) Results of experiments with Sugar Cane varieties,
(6) Experimental Station for Irrigation of Sugar Cane.

November meeting.—At this meeting, presided over by His Excellency the Governor, the following papers were laid before the Board :—

Bulletin No. 18—Experiments on the selection of Yellow Flint Maize.
„ No. 19—Experiments with varieties of Food Crops.
„ No. 20—Experiments with varieties of Sugar Cane.
(General Series)
„ No. 5—The Cost of Production of Sugar.—(Statistical Series)

Memo *re* : Factory figures 1919–20 Crop.
Preliminary Estimate 1920–21 Crop.
Revised Estimate 1920–21 Crop.
Final Estimate 1920-21 Crop.
Analysis of Exhausted Molasses.
Mosaic Disease of Sugar Cane.
Annual Report of the Department of Agriculture for 1919.
Report on the operations for the control of Phytalus Smithi for the season 1919-20.

The following matters received consideration by the Board :—

(1) Improvement of Stock condition in Mauritius,
(2) Motor Tractors for implemental tillage,
(3) Experiment Station for Irrigation in connection with the irrigation of sugar cane.
(4) Agricultural Shows.
(5) Work of the Maize Sècherie.
(6) Progress in relation to the Development of the Tobacco Industry.
(7) Agricultural College in the Tropics.
(8) British Empire Sugar Research Association.

PUBLICATIONS

The following publications were issued during the year :—

Bulletin Series.

Experiments on the selection of Yellow Flint Maize 1916–19.
Experiments with Varieties of Food Crops.
Experiments with Varieties of Sugar Cane.
The Cost of Production of Sugar in Mauritius.

Leaflet Series.

1st List of Palmae existing in the Royal Botanic Gardens, Pamplemousses.
Hints on the Cultivation of Tobacco.

The following memoranda and reports have been prepared and submitted to the Board of Agriculture :—

Memorandum respecting :

Advances for Erection of Dipping Tanks.
The Development of The Tobacco Industry in Mauritius.
Motor Tractors.
Experiment Station for Irrigation Problems.
Analysis of Exhausted Molasses.
Mosaic Disease of Sugar Cane.
Final Estimate of Crop 1919–20.
Factory figures for Crop 1919–20.
Preliminary, Revised and Final Estimates of Crop 1920–21.
Report on the Plaines Wilhems Agricultural Show.

LEGISLATION

The following Ordinances, Proclamations and Regulations relating to Agriculture were issued during the year :—

Ordinance No. 1 of 10th January 1920 to amend the Slaughtering of Cattle Restriction Ordinance, 1918.

Ordinance No. 20 of 1st May 1920 to provide for the exemption from payment in certain cases, of the tax on the Cultivation of Tobacco.

Ordinance No. 44 of 20th November, 1920 to authorise the incorporation of the Society " The Mauritius Stock Breeders' Association."

Notification No. 136 *re* : Conditions for Government Advances for erection of Dipping Tanks.

Proclamation No. 46 of 20th November, 1920, to remit stamp duties, &c., for the Curepipe Road and Grand Gaube Co-Operative Credit Societies.

EXPENDITURE & RECEIPTS

The expenditure of the Department has been as follows:—

EXPENDITURE	Rs. c.
Personal Emoluments ...	79,684.86
Maintenance of Gardens	16,220.49
General Services	2,841.23
Prevention of Plant Pests & Diseases & Destruction of Phytalus Smithi	38,491.85
Prevention of Animal Diseases	1,247.66
Upkeep of Stock	10,493.78
Establishment of Demonstration Plots	2,357.78
Subvention to "Société Horticole"	1,000.00
Travelling Expenses	5,157.17
Maintenance of Food Plantations	2,825.90
Maintenance of Experiment Stations	12,076.85
Minor Industries	18,652.92
Chemicals, Laboratory Supplies and Special Apparatus	2,917.44
Agricultural Shows	450.15
Nursery for Economic Plants	3,923.37
Registration of Chemists' Examination	12.15
Additional Typewriter...	400.00
Additional Accommodation and Machinery for Maize Sècherie	5,000.00
Purchase of Raw Tobacco for manufacture	3,812.98
Purchase of Maize for kilndrying	14,088.22
Total	221,654.80

The receipts were:—

RECEIPTS	Rs. c.
Services and Sales of Animals and Poultry	11,762.54
Sale of Tobacco	2,592.69
Sale of Canes	5,279.08
Sale of Flowers and Plants	1,603.51
Sale of Eggs ...	376.75
Rent of Tea Plantation	1,100.00
Government Maize Sècherie	21,905.82
Analytical Fees	422.00
Veterinary Fees (Customs)	1,426.00
Students' Fees	310.00
Miscellaneous	417.37
Destruction of Phytalus Smithi—Contribution by Planters	31,585.00
Total	78,780.76

GENERAL

In December 1920, the Director proceeded on a special mission to Rodrigues with a view to submitting proposals for the establishment of a branch of the Department of Agriculture in that Dependency. A special report on the subject was subsequently presented to Government.

The Director served as a member of the Alcohol Enquiry Commission, the report of which was presented to Government towards the end of the year.

He also served as Chairman of three special Committees appointed to consider:

(a) The introduction of Motor Implements.

(b) The improvement of Live Stock in the Colony.

(c) The establishment of an Experiment Station for the irrigation of Sugar Cane.

Reports of these Committees were submitted to Government.

He was further appointed to serve as a member of the Inter Departmental Wages' Committee.

The Department has again suffered to an increased extent from shortages of staff and from staff changes. It may be placed on record that during the four years that I have had charge of the Department of Agriculture, at no time has a full staff been available; at present the Department is seriously handicapped through the lack of an adequate supply of trained men. Notwithstanding this, existing lines of work have been maintained and many new lines undertaken.

This has only been possible owing to the fact that much additional work has been performed by members of the existing staff and I desire to record my appreciation of this fact. During the year three members of the superior staff left the Department to take up other appointments viz.: Mr. G. G. Auchinleck, B. Sc., A.I.C., F.C.S., Assistant Director and Chemist; Mr. H. Robert, Statistician, and Mr. F. Birkinshaw, Agricultural Instructor. All of these officers had been attached to this Department since its early days; Mr. Robert since its commencement in 1913 and Messrs. Auchinleck and Birkinshaw since 1914, and all rendered very valuable services during this period.

Their departure constitutes a serious loss both to the Department of Agriculture and to the agricultural community.

H. A. TEMPANY,
Director of Agriculture.

31st March, 1921.